COURSE INFORMATON					
Course Title	*Code*	*Semester*	*L+P+L Hour*	*Credits*	*ECTS*
Sustainable Innovative Food Processing Technologies	FDE 544	Spring	3 + 0 + 0	3	10

Prerequisites	-

Language of Instruction	English
Course Level	Master Degree
Course Type	Elective
Course Coordinator	-
Instructors	Assist. Prof. Özge TAŞTAN
Assistants	-
Goals	This course aims to examine innovative thermal and non-thermal food processing technologies, to evaluate them in terms of their use in sustainable food systems and to give information about their applications in the food industry.
Content	Sustainable innovation strategies in food technology, effects of conventional and innovative food processing technologies on food quality, valorization of food by-products by innovative food processing technologies [Sustainable extractions/green extraction technologies, such as microwave-assisted extraction (MAE), ultrasound-assisted extraction (UAE), high-pressure assisted extraction (HPAE), pulsed electric fields assisted extraction (PEF), supercritical fluids extraction (SFE)], analysis of commercialized processes and products in terms of potential use of new technologies in the production and sustainability.

Learning Outcomes	Programme Learning Outcomes	Teaching Methods	Assessment Methods
1) Develop knowledge in the novel food processing technologies as an alternative to traditional technologies, and understand the reasons behind the emergence of novel food preservation techniques.	1, 2, 3	1,2,3	A
2) Develop knowledge in novel thermal technologies and their potential use in food industry, microbial inactivation mechanisms, equipments and systems, and subject of scientific research about them.	1, 2, 3, 4, 6	1,2,3,12	A, C
3) Develop knowledge in novel nonthermal technologies and their potential use in food industry, microbial inactivation mechanisms, equipments and systems, and subject of scientific research about them.	1, 2, 3, 4, 6	1,2,3,12	A, C

4) To have knowledge about obtaining useful bioactive components from food wastes and byproducts with novel extraction technologies.	1, 2, 3, 4	1,2,3	A
5) To analyze the use of novel technologies in the production of different food products as an alternative to traditional processes in terms of their potential use and sustainability.	1,2,3,4,5,6	1,2,3,12	A, C, F

Teaching Methods:	1: Lecture, 2: Question-Answer, 3: Discussion, 12: Case Study
Assessment Methods:	A: Testing B: Presentation C: Homework, F: Project

COURSE CONTENT

Week	Topics	Study Materials
1	Introduction to the course: Objectives, importance, reasons of food deterioration	Materials for the course provided by instructor
2	Minimum food processing and hurdle technology	
3-4-5	Innovative thermal technologies and food applications	
6-7-8	Innovative nonthermal technologies and food applications	
9	Food wastes and utilization methods	
10-11-12	Novel extraction technologies and their applications on food wastes	
13-14	Presentations of final projects	

RECOMMENDED SOURCES

Textbook	Lecture notes (pdf)
Additional Resources	- Galanakis, C.M. 2018. Sustainable Food Systems from Agriculture to Industry, Elsevier academic press. - Tiwari, B.K., Norton, T., Holden, N.M. 2014. Sustainable Food Processing, Wiley. - Gustavo V. Barbosa-Cánovas, María S. Tapia, M. Pilar Cano. 2005. Novel food processing Technologies, CRC Press, Boca Raton. - Doona, C.J., Kustin, K., Feeherry, F.E. 2010. Case studies in novel food processing technologies, Woodhead Publishing. - Campden BRI Reports

MATERIAL SHARING

Documents	yulearn.yeditepe.edu.tr

Assignments	yulearn.yeditepe.edu.tr
Exams	Not shareable

ASSESSMENT		
IN-TERM STUDIES	**NUMBER**	**PERCENTAGE**
Mid-Term Exam	1	30
Assignments	2	30
Final Project	1	40
Total		**100**
CONTRIBUTION OF FINAL EXAMINATION TO OVERALL GRADE		40
CONTRIBUTION OF IN-TERM STUDIES TO OVERALL GRADE		60
Total		**100**

COURSE CATEGORY	Elective

COURSE'S CONTRIBUTION TO PROGRAMME							
No	Program Learning Outcomes	Contribution					
		1	2	3	4	5	
1	Knowledge of current and future challenges in the food system				X		
2	Ability to define and analyze food systems using the food system framework, ability to integrate sustainability outcomes into the food system framework			X			
3	Ability to apply knowledge in science, engineering and technology for the solution of food system problems			X			
4	Ability to apply the food system framework and systems thinking for the critical evaluation of food systems and food system challenges.			X			
5	Ability to use multidisciplinary design approaches for sustainability outcomes in food systems.		X				
6	Knowledge and skills to use innovation methods, approaches and tools for sustainability outcomes in food systems		X				

ECTS ALLOCATED BASED ON STUDENT WORKLOAD BY THE COURSE DESCRIPTION			
Activities	Quantity	Duration (Hour)	Total Workload (Hour)
Course Duration (Including the exam week: 15x Total course hours/week)	15	3	45
Hours for off-the-classroom study (Pre-study, practice, review/week)	15	3	45
Homework/Presentation	2	25	50
Midterm exam	**1**	45	45
Final project	**1**	55	55
Total Work Load			240
Total Work Load / 25 (h)			9.6
ECTS Credit of the Course			10